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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
Office Action Summary	10/790,340	GUSTAFSON, JAMES P.
	Examiner	Art Unit	
	Zheng Wei	2192	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>01 March 2004</u>.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-24</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-24</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>01 March 2004</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date <u>06/07/2004</u>.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____ .

DETAILED ACTION

1.   This office action is in response to the application filed on 03/01/2004.

2.   Claims 1-24 are pending and have been examined.

Oath/Declaration

3.   The Office acknowledges receipt of a properly signed oath/declaration filed on

June 07, 2004.

Priority

4.   This Application claims benefit of provisional application 60/450,908 filed on

02/28/2003. Therefore, the priority date considered for this application is

February 28, 2003.

Information Disclosure Statement

5.   The information disclosure statements filed 06/07/2004 has been placed in the

application file and the information referred to therein has been considered.

Drawings

6.   The drawings filed on March 01, 2004 are accepted by the Examiner.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 5 and 6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. The term "efficiently determining" in claims 5 and 6 is a relative term which renders the claim indefinite. The term "efficiently determining" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. For the purpose of compact prosecution, the Examiner treats it as –determining--.

Claim Rejections - 35 USC § 101

10. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

11. Claims 1-6 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1: Claims 1 claims a mobile handset, which comprises a firmware component and a software component; an update agent. However, both of these components are software/firmware components implemented by instruction sequences. Such claimed software/firmware module/components are software program listings per se and they do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer, which permit the computer program's functionality to be realized. Therefore, claim 1 is not statutory. See MPEP 2106.01(I)

Claims 2-6: Claims 2-6 are dependent claims of claim 1. These claims all fail to remedy the 35 USC 101 nonstatutory problems of above claims. Therefore they are rejected for the same reason.

--These rejections can be overcome by adding computer hardware components e.g., memory, and processor into the claims that permit the computer program's functionality to be realized.

Claim Rejections - 35 USC § 102

12.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

13.   Claims 1-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Rao

(Rao et al., US 7,082,549 B2).

Claim 1:

Rao discloses a mobile handset (see for example, Fig.1, item 107, "Mobile

Handset" and related text) comprising:

- at least one of a firmware component and a soft-ware component (see for

  example, Fig.1, item 117 "Update Agent", item 115 "Bootstrap" and related

  text);

- an update agent capable of updating the at least one of a firmware

  component and a software component employing an update process that

  comprises a plurality of transform passes (see for example, Fig.2, step 207-

  223 and related text); and the update agent executing at least one of the

  plurality of transform passes(update steps) in a fault-tolerant mode (see for

  example, Fig.1, "Bank 1...N", Fig.3 about updating process; also see Fig.2,

  step 215 "Fault-tolerant Update" and related text).

Claim 2:

Rao further discloses the mobile handset according to claim 1 wherein the update agent executes each of the plurality of transform passes in a fault-tolerant mode (see for example, Fig.3, steps 307-323, "Working Bank", "Backup Bank" and related text).

Claim 3:

Rao also discloses the mobile handset according to claim 1 wherein the update process comprises a pre-processing pass (see for example, Fig.3, step 311, "Copy Original Bank to Working Bank" and related text) and an update pass (see for example, Fig.3, step 313, "Update Working Bank" and related text).

Claim 4:

Rao further discloses the mobile handset according to claim 1 wherein the update agent is capable of determining a point of interruption of the update process, so as to restart the update process from the point of interruption on a subsequent invocation of the update process (see for example, Fig.1, step 213 "Determine Where to resume" and related text; also see Fig.5, step 509, "Determine Starting/Resumption Point" and related text).

Claim 5:

Rao also discloses the mobile handset according to claim 4 wherein the update

agent is capable of efficiently determining whether a previous invocation of the

update process was interrupted during a pre-processing pass or during an

update pass (see for example, Fig.1, step 213 "Determine Where to resume" and

related text; also see Fig.5, step 509, "Determine Starting/Resumption Point" and

related text; further see col.8, lines 51-54, "the point at which update processing

should begin or resume may be determined using a verification process in which

a CRC value is computed for each bank of non-volatile memory being updated.").

Claim 6:

Rao further discloses the mobile handset according to claim 1 wherein the

update agent is capable of efficiently determining which of the plurality of

transform passes was interrupted during a previous execution of the update

process (see for example, col.8, lines 51-54, "the point at which update

processing should begin or resume may be determined using a verification

process in which a CRC value is computed for each bank of non-volatile memory

being updated.").

Claim 7:

Rao also discloses the mobile handset according to claim 1 wherein the mobile handset further comprises:

- a plurality of memory banks (see for example, Fig.1, "Bank 1...N" and related text);

- a set of special signatures comprising at least one special signature corresponding to each of the plurality of transform passes; the at least one special signature being associated with the last of the memory banks that is updated in the corresponding transform pass (see for example, col.8, lines 51-54, "the point at which update processing should begin or resume may be determined using a verification process in which a CRC value is computed for each bank of non-volatile memory being updated.");

- at least a subset of the plurality of memory banks being modified in each of the plurality of transform passes (see for example, Fig.3, steps 307-323 and related text); and

- the update agent capable of determining which of the plurality of transform passes was interrupted during a previous execution of the update process (see for example, Fig.5, step 509, "Determine Starting /Resumption Point" and related text).

Claim 8:

Rao further discloses the mobile handset according to claim 7 wherein the

update agent determines the transform pass that was interrupted during a

previous execution of an update process, and the specific one of the plurality of

memory banks that was last to be successfully updated, in order to resume the

update process (see for example, col.8, lines 54-62, "The comparison continues

in a bank-by-bank fashion through the list until a bank of non-volatile memory is

encountered where the computed CRC value files to match the value in the list

for that bank. The failed match indicated an anomaly or corruption, thus

indicating the point at which the update activity should start or resume").

Claim 9:

Rao further discloses the mobile handset according to claim 8 wherein the

update agent compares, in a transform pass order, each special signature from

the set of special signatures to a signature computed for the last bank to be

updated in the corresponding transform pass, until a mismatch is detected, the

mismatch indicating a point of interruption during a previous update attempt (see

for example, col.8, lines 54-62, "The comparison continues in a bank-by-bank

fashion through the list until a bank of non-volatile memory is encountered where

the computed CRC value files to match the value in the list for that bank. The

failed match indicated an anomaly or corruption, thus indicating the point at

which the update activity should start or resume")..

Claim 10:

Rao also discloses the mobile handset of claim 7 wherein the special signature

comprises one of a cyclic redundancy check (CRC) value and an MD5 hash

value (see for example, col.8, lines 51-53, "update processing should begin or

resume may be determined using a verification process in which a CRC value is

computed; also see col.10, lines 51-53, "a CRC value (or a MD5 checksum, etc)

is computed to verify the results of the update operations on that bank").

Claim 11:

Rao discloses a mobile handset comprising a plurality of memory banks

containing at least one of a firmware and a plurality of software components, the

mobile handset comprising (see for example, Fig.1 "Bank 1...N", item 111 "Non-

Volatile Memory with Firmware/Software" and related text):

- an update package comprising a difference information (see for example,

  col.6, lines 10-27, the update package contains "update instructions" and

  "predetermined value for the bank being updated");

- an update agent capable of updating at least a portion of the at least one of

  firmware and a plurality of software components, the update agent employing

  an update process that comprises a plurality of transform passes, each

  transform pass updating a subset of the plurality of memory banks in a

predetermined bank order for that transform pass (see for example, Fig.1,

item 117, "Update Agent" and related text); and

- a set of decision maker banks identified within the plurality of memory banks,

   one decision maker bank for each of the plurality of transform passes, the set

   of decision maker banks used to determine which of the plurality of transform

   passes was interrupted, in order that the update process may be

   subsequently reattempted beginning with the interrupted transform pass (see

   for example, col.8, lines 41-62, "The comparison continues in a bank-by-bank

   fashion through the list until a bank of non-volatile memory is encountered

   where the computed CRC value fails to match the value in the list for that

   bank.").

Claim 12:

Rao further discloses the mobile handset of claim 11 wherein the update

package comprises information identifying the set of decision maker banks (see

for example, col.6, lines 10-27, the update package contains "update

instructions" and "predetermined value for the bank being updated"; also col.8,

lines 54-56, "The computed value for each bank is then compared to the

corresponding pre-computed value in a list of the firmware/software").

Claim 13:

Rao also discloses the mobile handset of claim 11 wherein the difference

information comprises a set of executable instructions for converting a first

version of the at least a portion of the at least one of firmware and a plurality of

software components, to a second version of the at least a portion of the at least

one of firmware and a plurality of software components (see for example, Fig.6,

steps 607-623 and related text).

Claim 14:

Rao further discloses the mobile handset of claim 11 wherein the update agent is

capable of:

i) computing a signature for a decision maker bank in the set of decision

maker banks, beginning with the decision maker bank for the first transform pass

in the transform pass order (see for example, col.8, lines 41-62, "CRC value is

computed" and related text);

ii) comparing the computed signature to a corresponding predetermined

signature for that transform pass, the predetermined signature contained in the

update package, to determine whether a match exists (see for example, col.8,

lines 41-62, "compared to the corresponding pre-computed value" and related

text) ;

iii) repeating (i) and (ii) for the next transform pass in the transform pass order, if

a match exists (see for example, col.8, lines 41-62, "The comparison continues in

a bank by bank fashion through the list until..."); and

iv) identifying the current transform pass as a point of interruption, if a match

does not exist (see for example, col.8, lines 41-62, "The failed match indicates an

anomaly or corruption, thus indicating the point at which the update activity

should start or resume.").

Claim 15:

Rao also discloses the mobile handset of claim 14 wherein:

the update package comprises a predetermined checksum for each memory

bank in the subset of the plurality of memory banks for the interrupted transform

pass (see for example, col.8, lines 41-62, "corresponding pre-computed value in

a list of CRC values provided within the update package.")

Claim 16:

Rao further discloses the mobile handset of claim 14 wherein the update agent is

capable of:

- initiating a recovery from the point of interruption in the transform pass order;

  and (see for example, Fig.6, step 609, "Determine Starting/Resumption Point"

  and related text)

- determining the first bank in the predetermined bank order for the interrupted

  transform pass for which a mismatch between a computed checksum and a

  predetermined checksum for a memory bank in the predetermined bank order

  for the interrupt transform pass occurs (see for example, Fig.6, steps 611-613

  and related text).

Claim 17:

Rao further discloses the mobile handset of claim 16 wherein the computed

checksum and the predetermined checksum comprise a cyclic redundancy check

(CRC) value (see for example, col.8, lines 51-53, "update processing should

begin or resume may be determined using a verification process in which a CRC

value is computed").

Claim 18:

Rao also discloses the mobile handset of claim 16 wherein the computed

checksum and the predetermined checksum comprise a MD5 hash value (see for

example, col.10, lines 51-53, "a CRC value (or a MD5 checksum, etc) is computed to verify the results of the update operations on that bank").

Claim 19:

Rao discloses a method for recovering from interruption of a fault-tolerant process of updating a mobile handset comprising a plurality of memory banks from a first firmware version to a second firmware version, the update process comprising a plurality of transform passes and having a transform pass order, each of the plurality of transform passes performing a transform upon the plurality of memory banks in a memory bank order, the method comprising:

- determining as a recovery transform pass, one of the plurality of transform passes interrupted during the update process (see for example, Fig.6, step 609, "Determine Starting /Resumption Point" and related text);

- determining as a recovery memory bank, one of the plurality of memory banks in the memory bank order for the interrupted transform pass during which update processing was interrupted (see for example, Fig.6, step 611, "Copy Original Bank to Working Bank" and related text); and

- invoking the update process by performing an update of the recovery memory bank using the recovery transform pass (see for example, Fig.6, step 613, "Update Working Bank using Backup Bank" and related text).

Claim 20:

Rao further discloses the method according to claim 19 wherein determining a recovery transform comprises:

- employing one of the plurality of memory banks as a decision maker bank for each of the plurality of transform passes, each of the decision maker banks identifying the last bank of the memory bank order for the corresponding one of the plurality of transform passes to be updated, the decision maker banks retrievable from an update package (see for example, col.8, lines 41-62, "The comparison continues in a bank by bank fashion through the list until..."); and

- determining an interrupted transform pass in the transform pass order, based upon the decision maker banks for the plurality of transform passes in the fault-tolerant update process (see for example, col.8, lines 41-62, "The comparison continues in a bank-by-bank fashion through the list until a bank of non-volatile memory is encountered where the computed CRC value fails to match the value in the list for that bank. The failed match indicates an anomaly or corruption, thus indicating the point at which the update activity should start or resume.").

Claim 21:

Rao further discloses the method according to claim 20 wherein determining an

interrupted transform pass comprises:

i) computing a checksum of a decision maker bank, beginning with the first

transform pass in transform pass order (see for example, col.8, lines 41-62,

"CRC value is computed" and related text);

ii) comparing the computed checksum to a predetermined checksum retrieved

from the update package to determine whether the computed checksum matches

the predetermined checksum exists (see for example, col.8, lines 41-62,

"compared to the corresponding pre-computed value" and related text);

iii)   repeating (i) and (ii) for the decision maker bank of each of the subsequent

transform passes in the transform pass order, if the computed and the

predetermined checksums for a decision maker bank match (see for example,

col.8, lines 41-62, "The comparison continues in a bank by bank fashion through

the list until..."); and

iv) Identifying as interrupted, a transform pass for which the computed and

predetermined checksums for a decision maker bank do not match (see for

example, col.8, lines 41-62, "The failed match indicates an anomaly or

corruption, thus indicating the point at which the update activity should start or

resume.").

Claim 22:

Rao also discloses the method according to claim 21 wherein the computed

checksum comprises one of a cyclic redundancy check (CRC) value and an MD5

hash value (see for example, col.8, lines 51-53, "update processing should begin

or resume may be determined using a verification process in which a CRC value

is computed; also see col.10, lines 51-53, "a CRC value (or a MD5 checksum,

etc) is computed to verify the results of the update operations on that bank").

Claim 23:

Rao further discloses the method according to claim 20 wherein the update

package comprises a set of executable instructions for converting a first firmware

version to a second firmware version (see for example, Fig.6, steps 611-613 and

related text).

Claim 24:

Rao further discloses the method according to claim 19 wherein the method is

employed during both an initial update attempt and during recovery from an

interrupted update attempt (see for example, Fig.6, step 609, "Determine

Starting/Resumption Point" and related text).

Conclusion

14.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure:

- Xuguang Yang (US 2004/0040020) discloses an electronic device with an

  update agent that employs preprocessing techniques for update;

- Patrick J. O'Neill (US 6,832,373 B2) discloses a system and method for

  updating and distributing information sequences that are comprised by

  software, devices and data;

- Gu et al., (US 6,925,467 B2) discloses a byte-level file differencing and

  updating algorithms;

- Ken'ichi Imamatsu (US 6,687,901 B1) discloses a method and apparatus for

  updating software in radio terminal device;

- David Owen Erstad (US 7,058,849 B2) discloses a mechanism and method

  for maintaining a consistent state in a non-volatile random access memory

  system without constraining normal computer operation is provided, thereby

  enabling a computer system to recover from faults, power loss, or other

  computer system failure without a loss of data or processing continuity.

15.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Zheng Wei whose telephone number is (571)

270-1059 and Fax number is (571) 270-2059. The examiner can normally be

reached on Monday-Thursday 8:00-15:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam can be reached on (571) 272-3695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature of relating to the status of this application or proceeding should be directed to the TC 2100 Group receptionist whose telephone number is 571- 272-1000.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ZW

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SUPERVISORY PATENT EXAMINER